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W e Claims

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1. Annealing apparatus for the annealing metallic billets (14), especially for the annealing of aluminum-comprising billets (14), comprising at least two contact elements such as contact plates (24, 26, 32) made of electrically conducting material which are electrically connected to a voltage source and which receive a billet (14) in such a manner that said billet (14) moves relative to said contact elements and an electric current flows through said billet (14) between said contact elements

characterized in that

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the material of at least one of said contact element is of a metal alloy which matches that of the material of said billet (14) to such an extent that substantially no material from said billet (14) diffuses into said contact element.

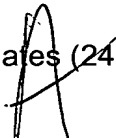
2. Annealing apparatus particularly according to one of the preceding claims,
characterized in that
said billet material is a light metal, preferably aluminum, and said contact element material is made from the same said light metal or from an alloy of the same said light metal.
3. Annealing apparatus particularly according to one of the preceding claims,
characterized in that
said billet (14) can be moved through said annealing apparatus (10) along a predefined transport track (12).
4. Annealing apparatus particularly according to one of the preceding claims,
characterized in that
said contact elements between which said billet (14) can be connected such that an electrical current flows through said billet (14) between said contact elements are substantially produced of the same material.

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5. Annealing apparatus particularly according to one of the preceding claims,
characterized in that
same is provided with a plurality of annealing paths (22, 30), whereby an annealing path (22, 30) has at least two contact elements for receiving a billet (14) such that during the movement of said billet (14), an electrical current can flow through said billet (14) between said contact elements and whereby a contact element is encompassed in one or more annealing paths (22, 30).
6. Annealing apparatus particularly according to one of the preceding claims,
characterized in that
same is provided with at least one guiding means such as deviating rollers (28) or comb rollers or the like which do not function as contact elements under certain set circumstances so that the billet (14) can be transported along predetermined sections of said transport track (12) through said annealing apparatus (10) without said billet (14) being subjected to an electrical current flow at said sections.
7. Annealing apparatus particularly according to one of the preceding claims,
characterized in that
same is provided with at least one cold-processing means (16) through which said billet (14) is drawn, whereby said cold-processing means (16) is disposed with preferably at least one die (18) and whereby the last die (18) in said cold-processing means (16) in the material flow direction is a terminal die.
8. Annealing apparatus particularly according to one of the preceding claims,
characterized in that
at least one predetermined section of said transport track (12) is a cooling section in which said billet (14) can be cooled.

9. Annealing apparatus particularly according to claim 8, **characterized in that** said billet (14) is moved through a cooling medium within said cooling section which is preferably an oil (34), particularly preferably a thin oil (34).
10. Annealing apparatus particularly according to one of claims 8 or 9, **characterized in that** same is provided with a stripping or similar means able to remove a coolant or the like from the surface of said billet (14) and which in particular is provided with a die (36), whereby said stripping means is preferably arranged such that it can be cooled and/or lubricated by said coolant.
11. Annealing apparatus particularly according to one of the preceding claims, **characterized in that** said billet (14) is moved through a protective gas (20) or the like in at least one predetermined section of said transport track (12).
12. Annealing apparatus particularly according to one of the preceding claims, **characterized in that** said transport track (12) for said billet (14) extends through a cold-processing means (16) as well as through a cooling section, whereby a section of said transport track (12) arranged between said cold-processing means (16) and said cooling section is provided with protective gas (20) or the like and whereby an annealing path (22, 30) is preferably arranged on said transport track (12) between said cold-processing means (16) and said cooling section.

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13. Annealing apparatus particularly according to one of the preceding claims, **characterized in that** same is provided with at least one drawing means, such as a draw plate or the like, which can subject the billet (14) to a force which induces said billet (14) to be moved along the transport track (12).
14. Annealing apparatus particularly according to one of the preceding claims, **characterized in that** at least two and preferably all contact plates (24, 26, 32) are provided with separate drive means. 
15. Annealing apparatus particularly according to claim 14, **characterized in that** same is provided with a control and/or regulating means which controls said drive means of said contact plates (24, 26, 32) so as to prevent any slippage of billet (14) in consideration of changing length of said billet (14).
16. Method of manufacturing a metallic, low-stress billet (14), particularly a low-stress billet (14) containing aluminum, comprising the following steps:
transporting a billet (14) along a transport track (12), and notably in such a manner that said billet (14) comes into contact with at least two contact elements, which are connected to a voltage source, in at least one predetermined section of said transport track (12) such that an electrical current flows through a segment of said billet (14) between said contact elements during the transport of said billet (14), whereby the material of said contact elements is selected and/or matched to the material of said billet such that essentially no embrittlement and/or diffusion between the contact element material and the billet material will occur during transport of said billet (14) and/or during the flowing of the current through said billet (14), whereby the flow of said electrical current through said billet (14) induces said billet (14) to be annealed at low stress.

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17. Method according to claim 16, comprising the step of selecting contact elements which contain aluminum, and in particular an aluminum alloy, so as to subsequently transport an aluminum-comprising billet (14) such that said billet (14) is annealed at low stress.
18. Method for manufacturing a low-stressed billet (14), when embodied with the features of claim 14 or claim 15, comprising the step of cooling said billet (14) following annealing by means of an oil (34), preferably a thin oil.
19. Method according to claim 18, comprising the step of stripping off said oil (34) from said billet (14), and in particular by means of a die (36).

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